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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,065	01/12/2001	Appadurai Thangaraj	4355D (DIV)	3120

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EXAMINER	
NGUYEN, NGOC YEN M	
ART UNIT	**PAPER NUMBER**
1754	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/760,065	THANGARAJ ET AL.	
	Examiner	Art Unit	
	Ngoc-Yen M. Nguyen	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *26-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *63* is/are allowed.

6)☒ Claim(s) *26-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim 63 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest a device comprising a composition having at least one metal chlorite and at least one acid forming component, wherein the acid forming component is selected from the group consisting of synthetic molecular sieves, acid ion exchange resins, acid treated clays and acid treated calcined clays.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-62 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a device with a membrane "comprising a material which permits controlled passage of liquid water and/or water vapor into the enclosed space to thereby allow the metal chlorite and the acid forming component to react to produce chlorine dioxide *within the enclosed space*" when the membrane is a water insoluble membrane, does not reasonably provide enablement for a water soluble membrane. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. When a water soluble membrane is used, the membrane

will at least be dissolved when the device is placed into water, thus, there would be no "enclosed space", thus, the chlorine dioxide cannot be produced within the enclosed space as required in the independent claim.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 581 550 in view of either CN 1,104,610 or CA 959,238.

EP '550 discloses a solid composition capable of releasing chlorine dioxide upon dissolution in water, said composition comprising:

a. a water soluble chlorite salt

b. an oxidizing chlorine-releasing agent, in the form of one or more sodium- and/or potassium-dichloro-s-trazinetrione(s)s and/or trichloro-s-triazinetrione(s); and

c. a proton-donor serving as a water-soluble agent capable of lowering the pH of an aqueous solution to less than 3 (note claim 1).

The proton-donor can be citric acid and/or malic acid (note claim 4) or sodium- and/or potassium- hydrogen sulfate and/or pyrosulfate (note claim 3).

For the size of the composition, i.e., whether the composition is in the form of powder, tablet or agglomerate, such limitation is not seen as a patentable difference

because it would have been obvious to one skilled in the art to select the proper form for the composition as long as the composition can still react to form chlorine dioxide when it contacts water.

EP '550 discloses that the composition can be used to treat potable water, swimming pool (note page 3, lines 52-53).

The difference is EP '550 does not teach a membrane that separates the solid composition and the water solution.

CN '610 is applied as stated above to teach that it is known and convenient way to place the chlorine generating composition in a bag so that the composition can be added to the water in a pre-measured amount by throwing the bag in the water. The chlorine dioxide can be used to disinfect drinking water (note page 4, 4th paragraph of the English translation). Since the cloth bag disclosed in CN '610 is not water soluble, no additional contaminant would be introduced into the drinking water.

Alternatively, CA '238 can be applied as stated below.

CA '238 discloses a process for producing chlorine dioxide by introducing water into a receptacle which contains a chlorite of an alkali metal or an alkaline earth metal and an acid. The chlorite and the acid are wrapped or packed in a water soluble envelope or container so that upon the introduction of water into the receptacle, the water soluble envelopes dissolve, to react and to form chlorine dioxide which is immediately absorbed by the water to form an aqueous chlorine dioxide or chlorous acid solution (note page 4, first full paragraph). CA '238 further discloses that the receptacle, i.e., bag, can be used to treat a swimming pool. When a water soluble material is used

for the bag, the bad would dissolve in the water thereby eliminate the need for removing the bag from the pool (note paragraph bridging pages 10-11).

For claim 60, it would have obvious to one skilled in the art to use any water soluble material, including Kraft paper to form the envelope for the chlorine-generating composition. Without a showing of criticality or unexpected results, the use of Kraft paper is not seen as a patentable difference.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to put the chlorine-generating composition in a bag, either a water-insoluble one as suggested by CN '244 or a water-soluble one as suggested by CA '238 to form bags of pre-measured amount of the chlorine-generating composition and such bags would be conveniently added to the water to form chlorine dioxide.

Since the combined teaching has all the positive requirements as in the claimed device, the "device" of the combined teaching would inherently as "capable" as the claimed device in producing an aqueous solution comprising the same amount of chlorine dioxide.

Claims 1-36, 39-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aston (2,482,891) in view of either CN 1,104,610 or CA 959,238.

Aston '891 discloses a composition in which in contact with water evolves chlorine dioxide. The composition is valuable for use in the bleaching of a variety of organic materials and especially cellulosic materials (note column 1, lines 1-6).

For the instant claim 61, the composition of Aston '891 is a solid mixture in which the active ingredients are a salt of chlorous acid and a solid organic acid anhydride (note claim 1).

The composition of Aston '891 can further contain a desiccant, such as calcium chloride (note Example 2), and it may also contain inert diluent materials, such as sodium chloride, sodium carbonate, etc. (note column 2, lines 39-52). The desiccant or the diluent is considered the same as the non-acid forming additive or the alkali metal or alkaline earth metal acid acids.

For other desiccant or acid beside those exemplified in Aston '891, it would have been obvious to one of ordinary skill in the art to select any known desiccant, such as silica gel, in the art for the composition of Aston '891 as long as it can render the composition of Aston '891 stable or any known acid as long as chlorine dioxide can be produced when the composition of Aston '891 comes in contact with water.

Each of the components of the composition is most preferably present in finely powdered form (note column 1, lines 7-14), however, it would have been obvious to one skilled in the art to produce the composition of Aston '891 in any similar form, such as pellets, granules, etc., as long as chlorine dioxide can be produced when contacting the composition of Aston '891 with water.

The difference is Aston '891 does not disclose a membrane which defines at least an enclosed space containing a mixture of at least one metal chlorite and at least one acid forming component.

CN '610 or CA '238 is applied as stated above.

For the material of the membrane, note the reason stated in the above rejection.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to put the composition of Aston '891 in a water-insoluble bag, as suggested by CN '610, or in a water-soluble bad, as suggested by CA '238 to form bags of pre-measured amount of the chlorine-generating composition and such bags would be conveniently added to the water to form chlorine dioxide.

Applicant's arguments filed March 29, 2006 have been fully considered but they are not persuasive.

Applicants argue that the applied references do not disclose the claimed membrane comprises a material which permits (a) and (b) as recited in Applicants' claims.

The water soluble bag as disclosed in CA '238 or the insoluble cloth bad as disclosed in CN '610 meets the requirements for the claimed membrane since water can pass through the membrane to cause the composition which is held within the bag to react to form chlorine dioxide and the chlorine dioxide must have passed to the surrounded water because the water is disclosed as being treated by the chlorine dioxide in CA '238 and CN '610.

Applicants argue that the package of CA '238 contains separate compartments for the alkali/alkaline earth metal chlorite and the acid.

CA '238 contains separate compartments to prevent premature reaction between the two reactants. However, the composition of EP '550 or Aston '981 is disclosed as

being stable, therefore, separate compartments would not be required for the composition of EP '550 or Aston '981.

Applicants argue that the bag in CA '238 needs to be dissolved.

Since Applicants' dependent claims 27, 42-44 state that the membrane can be a water soluble compound, it appears that Applicants' claims do not exclude the dissolving bag of CA '238. The water soluble bag as disclosed in CA '238 would be as capable of permitting controlled passage of liquid water and/or water vapor in the "enclosed space" as the claimed water soluble membrane. CA '238 does teach that the bag can be polyethylene bags (note page 7, first full paragraph).

Applicants argue that in CA '238, chlorine dioxide is not produced within the enclosed space and there is no teaching in CA '238 to employ a membrane that permits controlled passage of liquid water and/or water vapor into the enclosed space.

Again, since the membrane in Applicants' claims can be water soluble, just as in CA '238, the rejection is maintained.

Applicants argue that CN '610 teaches a wax coating.

Again CN '610 is only relied to teach to use of a bag for the convenient of adding pre-measured composition into water to generate chlorine dioxide. Since the composition of EP '550 or Aston '981 is stable, no wax coating would be needed.

Applicants argue request the Examiner to identify where is a factual support in CN '610 and CA '238 that shows the direct mixture of metal chlorite and specific acid forming components, and the membrane that permits controlled passage of liquid water and/or water vapor into the enclosed space.

EP '550 or Aston '981 is applied above to teach the "direct mixture" of metal chlorite and acid forming components, not CA '238 or CN '610. It should be noted the bag as disclosed in CA '238 or CN '610 is either water soluble or water insoluble as required in Applicants' claimed invention, thus the bag of CA '238 or CN '610 would be as capable of permitting "controlled passage of liquid water and/or water vapor" as the claimed membrane. Also any passage of water through the bag of either CA '238 or CN '610 is considered as a "controlled passage" since there is actual "controlled" condition required.

The rejection over Aston in view of CA '238 or CN '610 is maintained for the same reason as stated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 or (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.

Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
June 10, 2006